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10/036,305	12/28/2001	Jang-Kun Song	8071-4 (OPP 010597US)	2751

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EXAMINER	
RUDE, TIMOTHY L	
ART UNIT	**PAPER NUMBER**
2883	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/036,305	SONG ET AL.	
	Examiner	Art Unit	
	Timothy L Rude	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date: _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims

1. Claims 1, 7, and 9 are amended. Claim 3 is canceled.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

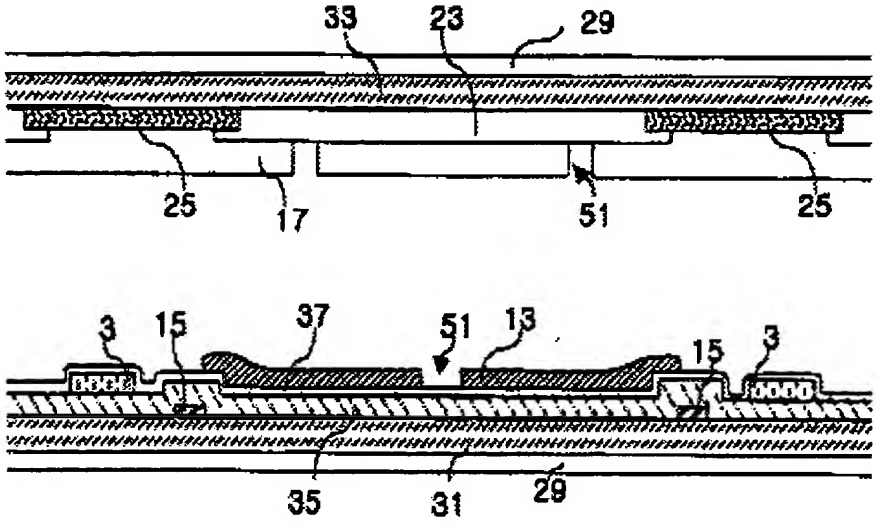
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1, 2, 4, and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (Kim) USPAT 6,462,798 B1 in view of Takao et al (Takao) USPAT 4,917,471.

As to claim 1, Kim discloses in Figure 3C a liquid crystal display comprising: a first insulating substrate, 31; a gate line, 1 (Applicant's first wiring line), assembly formed on the first insulating substrate with a plurality of first wiring lines; a data line, 3 (Applicant's second wiring line) assembly crossing over the first wiring line assembly with a plurality of second wiring lines while defining pixel regions (col. 3, lines 20-65), the second wiring line assembly being insulated, 35, from the first wiring line assembly; a pixel electrode, 13, formed at each pixel region with a first opening pattern; a thin film transistor (col. 3, lines 48-51) connected to the first wiring line assembly, the second wiring line assembly, and the pixel electrode; a second insulating substrate, 33, facing the first insulating substrate; color filters, 23, of red, green and blue formed on the second insulating substrate; a common electrode, 17, formed on the second insulating substrate with the color filters having a second opening pattern; and a liquid crystal layer (col. 3, lines 61-62) sandwiched between the first and the second insulating substrates with liquid crystal molecules, the liquid crystal molecules of the liquid crystal layer being vertically aligned (col. 6, lines 17-45) with respect to the, first and the second substrates when no electric field is applied between the pixel electrode and the common electrode.

FIG. 3C

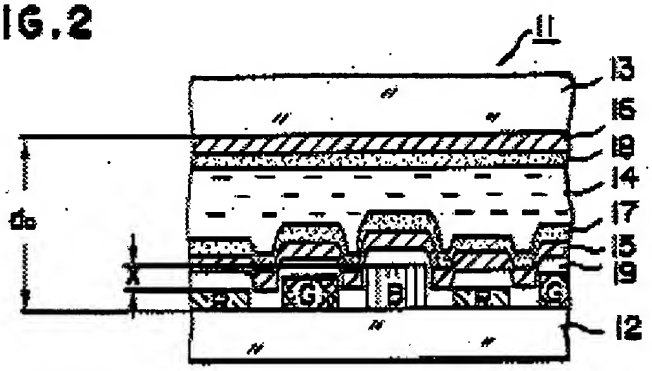


Kim does not explicitly disclose a display wherein a B cell gap is differentiated from an R cell gap or a G cell gap, the R cell gap indicates the thickness of the liquid crystal layer at the region of the red color filter, the G cell gap indicates the thickness of the liquid crystal layer at the region of the green color filter, and the B cell gap indicates the thickness of the liquid crystal layer at the region of the blue color filter, and wherein the B cell gap, the R cell gap and the G cell cap are differentiated from each other by: R cell gap - G cell gap < G cell gap - B cell gap.

Takao teaches a display in Figure 2 wherein a B cell gap is differentiated from an R cell gap or a G cell gap, the R cell gap indicates the thickness of the liquid crystal layer at the region of the red color filter, the G cell gap indicates the thickness of the liquid crystal layer at the region of the green color filter, and the B cell gap indicates the thickness of the liquid crystal layer at the region of the blue color filter, and that each

color [including Green] layer thickness should be made as small as possible [col. 6, lines 3-6, resulting in Applicant's B cell gap, the R cell gap and the G cell cap are differentiated from each other by: R cell gap - G cell gap < G cell gap - B cell gap, because one would make the thickness of the G layer as close to that of the thinnest R layer as possible], in order to adjust the desired spectral characteristics (col. 4, line 65 through col. 7, line 7, especially col. 5, lines 46-49 and col. 5, lines 3-19).

FIG.2



Takao is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a B cell gap that is differentiated from an R cell gap or a G cell gap, the R cell gap indicates the thickness of the liquid crystal layer at the region of the red color filter, the G cell gap indicates the thickness of the liquid crystal layer at the region of the green color filter, and the B cell gap indicates the thickness of the liquid crystal layer at the region of the blue color filter, and wherein the B cell gap, the R cell gap and the G cell cap are differentiated from each other by: R cell gap - G cell gap < G cell gap - B cell gap, in order to adjust the desired spectral characteristics while keeping each color layer as thin as possible.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Kim with a B cell gap that is differentiated from an R cell gap or a G cell gap, the R cell gap indicates the thickness of the liquid crystal layer at the region of the red color filter, the G cell gap indicates the thickness of the liquid crystal layer at the region of the green color filter, and the B cell gap indicates the thickness of the liquid crystal layer at the region of the blue color filter, and wherein the B cell gap, the R cell gap and the G cell cap are differentiated from each other by: R cell gap - G cell gap < G cell gap - B cell gap of Takao in order to adjust the desired spectral characteristics.

As to claim 7, Kim in view of Takao, as combined above, disclose the display comprising: a color filter substrate for a liquid crystal display, the color filter substrate comprising: an insulating substrate, 33; a light shielding layer, 25 (Applicant's black matrix), formed on the insulating substrate, the black matrix having portions for defining pixel regions; color filters, 23, of red, green and blue formed at the pixel regions; an overcoat layer (col. 13, lines 1-6, and col. 9, lines 59-62) covering the color filters; and a transparent (col. 4, lines 44-48) electrode, 17, formed on the overcoat layer with an opening pattern, 51; wherein the blue color filter has a thickness larger than the red color filter or the green color filter (Takao, Figure 2).

As to claims 2 and 8, Takao teaches example 2 of his display (col. 15, line 35 though col. 16, line 60, especially col. 16, lines 15-17) wherein the color filter thickness

varies (and consequently the liquid crystal cell gap varies) within the range of 0.5 μm to 1.5 μm, particularly preferably at dB>dG>dR, such that the maximum difference, X, is 0.1μm and has the relation $X<(1/10)d_0$, (col. 2, lines 25-37) where d_0 is the interval between the substrates (falls within Applicant's range of a B cell gap that is established to be smaller than the R cell gap or the G cell gap by 0.2±0.15 μm (equivalent to 0.05 μm to 0.35μm).

Takao teaches color filter thickness and cell gap differentials as results effective variables to adjust the desired spectral characteristics (col. 5, line 35 through col. 7, line 7, especially col. 5, lines 46-49). Optimization of a results effective variable requires only ordinary skill in the art of liquid crystals (MPEP 2144.05 II).

Takao is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a B cell gap that is established to be smaller than the R cell gap or the G cell gap by 0.2±0.15 μm in order to adjust the desired spectral characteristics.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Kim with a B cell gap that is established to be smaller than the R cell gap or the G cell gap by 0.2±0.15μm of Takao in order to adjust the desired spectral characteristics.

As to claim 4, Kim discloses a display wherein the first and the second opening patterns partition the pixel region into a plurality of microdomains (col. 3, lines 20-40).

As to claim 9, the process of manufacturing a liquid crystal display, comprising the steps of: forming a first insulating substrate; forming a first wiring line assembly with a plurality of first wiring lines on the first insulating substrate; forming a second wiring line assembly with a plurality of second wiring lines crossing over the first wiring line assembly while defining pixel regions, the second wiring line assembly being insulated from the first wiring line assembly; forming a pixel electrode at each pixel region with a first opening pattern; forming a second insulating substrate facing the first insulating substrate; forming color filters of red, green and blue on the second insulating substrate; forming a common electrode on the second insulating substrate with the color filters having a second opening pattern; forming a liquid crystal layer sandwiched between the first and the second insulating substrates with liquid crystal molecules, the liquid crystal molecules of the liquid crystal layer being vertically aligned with respect to the first and the second substrates when no electric field is applied between the pixel electrode and the common electrode; and differentiating a B cell gap from an R cell gap or a G cell gap, the R cell gap indicates the thickness of the liquid crystal layer at the region of the red color filter, the G cell gap indicates the thickness of the liquid crystal layer at the region of the green color filter, and the B cell gap indicates the thickness of the liquid crystal layer at the region of the blue color filter, and wherein the B cell gap, the R cell gap and the G cell cap are differentiated from each other by: R cell gap - G cell gap < G cell gap - B cell gap, would have been obvious to those having ordinary skill in the art of liquid crystals, given the liquid crystal display device of Kim in view of Takao above.

As to claim 10, the process of manufacturing according to claim 9, wherein at least one of the first and second opening patterns partitions the pixel region into a plurality of micro-domains would have been obvious to those having ordinary skill in the art of liquid crystals, given the liquid crystal display device above.

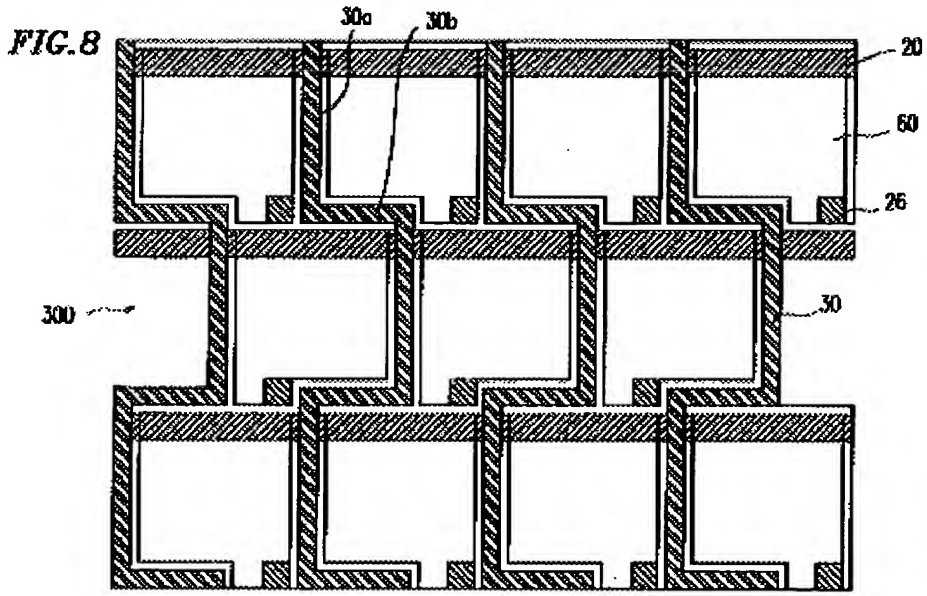
As to claim 11, the process of manufacturing according to claim 9, wherein the B cell gap is formed to be smaller than the R cell gap or the G cell gap by 0.2±0.15 μm would have been obvious to those having ordinary skill in the art of liquid crystals, given the liquid crystal display device above.

3. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Takao as applied to claims 1 and 4 above, and further in view of Kanemori et al (Kanemori) USPAT 6,275,274 B1.

As to claim 6, Kim in view of Takao, as combined above, disclose the liquid crystal display of claim 4.

Kim in view of Takao do not explicitly disclose a display wherein the distance between two neighboring second wiring lines is repeatedly varied per a predetermined length, and the pixel electrode has lateral sides positioned, close to the second wiring lines with the same outline such that the pixel electrode bears a narrow portion and a wide portion.

Kanemori teaches a display in Example 3 (Figures 8 and 9, col. 8, line 65, col. 9, line 21) wherein the distance between two neighboring second wiring lines, 30, 30a, and 30b, is repeatedly varied per a predetermined length, and the pixel electrode has lateral sides positioned, close to the second wiring lines with the same outline such that the pixel electrode bears a narrow portion and a wide portion to avoid (Title, col. 5, lines 22-26) unwanted color shade pattern cycle (unwanted stripes).



Kanemori is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to establish a distance between two neighboring second wiring lines that is repeatedly varied per a predetermined length, and the pixel electrode has lateral sides positioned, close to the second wiring lines with the same outline such that the pixel electrode bears a narrow portion and a wide portion to avoid unwanted color shade pattern cycle.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Kim in view of Takao with a distance between two neighboring second wiring lines that is repeatedly varied per a predetermined length, and the pixel electrode has lateral sides positioned, close to the second wiring lines with the same outline such that the pixel electrode bears a narrow portion and a wide portion of Kanemori to avoid unwanted color shade pattern cycle.

As to claim 5, Kim in view of Takao, as combined above, disclose the liquid crystal display of claim 4.

Kim in view of Takao do not explicitly disclose a display wherein the micro-domains are classified into left and right domains, and upper and lower domains, the volume occupied by the upper and lower domains being larger than the volume occupied by the left and right domains.

Kanemori teaches a display in Example 3 (Figures 8 and 9, col. 8, line 65, col. 9, line 21) wherein the distance between two neighboring second wiring lines, 30, 30a, and 30b, is repeatedly varied per a predetermined length, and the pixel electrode has lateral sides positioned, close to the second wiring lines with the same outline such that the pixel electrode bears a narrow portion and a wide portion to avoid (Title, col. 5, lines 22-26) unwanted color shade pattern cycle (unwanted stripes).

Kanemori is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to establish a distance between two neighboring

second wiring lines that is repeatedly varied per a predetermined length, and the pixel electrode has lateral sides positioned, close to the second wiring lines with the same outline such that the pixel electrode bears a narrow portion and a wide portion to avoid unwanted color shade pattern cycle. This would result in unequal pixel areas in the domain regions of the pixel of Kim in view of Takao which in turn would result in the claimed micro-domains are classified into left and right domains, and upper and lower domains, the volume occupied by the upper and lower domains being larger than the volume occupied by the left and right domains.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Kim in view of Takao with micro-domains classified into left and right domains, and upper and lower domains, the volume occupied by the upper and lower domains being larger than the volume occupied by the left and right domains of Kanemori to avoid unwanted color shade pattern cycle.

4. Claims 1, 4, 7, and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (Kim) USPAT 6,462,798 B1 in view of Ogawa et al (Ogawa) USPAT 4,632,514.

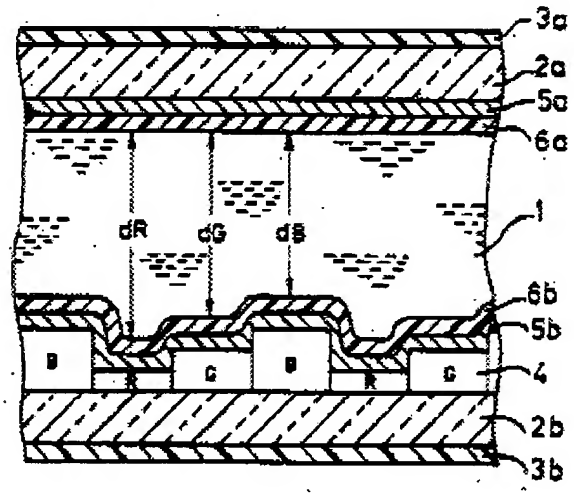
As to claim 1, Kim discloses in Figure 3C a liquid crystal display comprising: a first insulating substrate, 31; a gate line, 1 (Applicant's first wiring line), assembly

formed on the first insulating substrate with a plurality of first wiring lines; a data line, 3 (Applicant's second wiring line) assembly crossing over the first wiring line assembly with a plurality of second wiring lines while defining pixel regions (col. 3, lines 20-65), the second wiring line assembly being insulated, 35, from the first wiring line assembly; a pixel electrode, 13, formed at each pixel region with a first opening pattern; a thin film transistor (col. 3, lines 48-51) connected to the first wiring line assembly, the second wiring line assembly, and the pixel electrode; a second insulating substrate, 33, facing the first insulating substrate; color filters, 23, of red, green and blue formed on the second insulating substrate; a common electrode, 17, formed on the second insulating substrate with the color filters having a second opening pattern; and a liquid crystal layer (col. 3, lines 61-62) sandwiched between the first and the second insulating substrates with liquid crystal molecules, the liquid crystal molecules of the liquid crystal layer being vertically aligned (col. 6, lines 17-45) with respect to the, first and the second substrates when no electric field is applied between the pixel electrode and the common electrode.

Kim does not explicitly disclose a display wherein a B cell gap is differentiated from an R cell gap or a G cell gap, the R cell gap indicates the thickness of the liquid crystal layer at the region of the red color filter, the G cell gap indicates the thickness of the liquid crystal layer at the region of the green color filter, and the B cell gap indicates the thickness of the liquid crystal layer at the region of the blue color filter, and wherein the B cell gap, the R cell gap and the G cell cap are differentiated from each other by: R cell gap - G cell gap < G cell gap - B cell gap.

Ogawa teaches a display in Figure 15 wherein a B cell gap is differentiated from an R cell gap or a G cell gap, the R cell gap indicates the thickness of the liquid crystal layer at the region of the red color filter, the G cell gap indicates the thickness of the liquid crystal layer at the region of the green color filter, and wherein the B cell gap, the R cell gap and the G cell cap are differentiated from each other by: R cell gap - G cell gap < G cell gap - B cell gap (col. 13, lines 25-44) to provide a display with a large tolerance for error of thicknesses in assembling (improved producibility).

FIG.15



Ogawa is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a B cell gap is differentiated from an R cell gap or a G cell gap, the R cell gap indicates the thickness of the liquid crystal layer at the region of the red color filter, the G cell gap indicates the thickness of the liquid crystal layer at the region of the green color filter, and wherein the B cell gap, the R cell gap and the G cell cap are differentiated from each other by: R cell gap - G cell gap < G

cell gap - B cell gap to provide a display with a large tolerance for error of thicknesses in assembling for improved producibility.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Kim with a B cell gap is differentiated from an R cell gap or a G cell gap, the R cell gap indicates the thickness of the liquid crystal layer at the region of the red color filter, the G cell gap indicates the thickness of the liquid crystal layer at the region of the green color filter, and wherein the B cell gap, the R cell gap and the G cell cap are differentiated from each other by: R cell gap - G cell gap < G cell gap - B cell gap of Ogawa to provide a display with a large tolerance for error of thicknesses in assembling for improved producibility.

As to claim 4, Kim discloses a display wherein the first and the second opening patterns partition the pixel region into a plurality of microdomains (col. 3, lines 20-40).

As to claim 7, Kim in view of Ogawa, as combined above, disclose the display comprising: a color filter substrate for a liquid crystal display, the color filter substrate comprising: an insulating substrate of Kim, 33; a light shielding layer, 25 (Applicant's black matrix), formed on the insulating substrate, the black matrix having portions for defining pixel regions; color filters, 23, of red, green and blue formed at the pixel regions; an overcoat layer (col. 13, lines 1-6, and col. 9, lines 59-62) covering the color filters; and a transparent (col. 4, lines 44-48) electrode, 17, formed on the overcoat layer

with an opening pattern, 51; wherein the blue color filter of Ogawa has a thickness larger than the red color filter or the green color filter.

As to claim 9, the process of manufacturing a liquid crystal display, comprising the steps of: forming a first insulating substrate; forming a first wiring line assembly with a plurality of first wiring lines on the first insulating substrate; forming a second wiring line assembly with a plurality of second wiring lines crossing over the first wiring line assembly while defining pixel regions, the second wiring line assembly being insulated from the first wiring line assembly; forming a pixel electrode at each pixel region with a first opening pattern; forming a second insulating substrate facing the first insulating substrate; forming color filters of red, green and blue on the second insulating substrate; forming a common electrode on the second insulating substrate with the color filters having a second opening pattern; forming a liquid crystal layer sandwiched between the first and the second insulating substrates with liquid crystal molecules, the liquid crystal molecules of the liquid crystal layer being vertically aligned with respect to the first and the second substrates when no electric field is applied between the pixel electrode and the common electrode; and differentiating a B cell gap from an R cell gap or a G cell gap, the R cell gap indicates the thickness of the liquid crystal layer at the region of the red color filter, the G cell gap indicates the thickness of the liquid crystal layer at the region of the green color filter, and the B cell gap indicates the thickness of the liquid crystal layer at the region of the blue color filter, and wherein the B cell gap, the R cell gap and the G cell cap are differentiated from each other by: R cell gap - G cell gap < G

cell gap - B cell gap, would have been obvious to those having ordinary skill in the art of liquid crystals, given the liquid crystal display device of Kim in view of Ogawa above.

As to claim 10, the process of manufacturing according to claim 9, wherein at least one of the first and second opening patterns partitions the pixel region into a plurality of micro-domains would have been obvious to those having ordinary skill in the art of liquid crystals, given the liquid crystal display device Kim in view of Ogawa above.

As to claim 11, the process of manufacturing according to claim 9, wherein the B cell gap is formed to be smaller than the R cell gap or the G cell gap by 0.2±0.15 μm would have been obvious to those having ordinary skill in the art of liquid crystals, given the liquid crystal display device Kim in view of Ogawa above.

5. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Ogawa as applied to claims 1 and 4 above, and further in view of Kanemori.

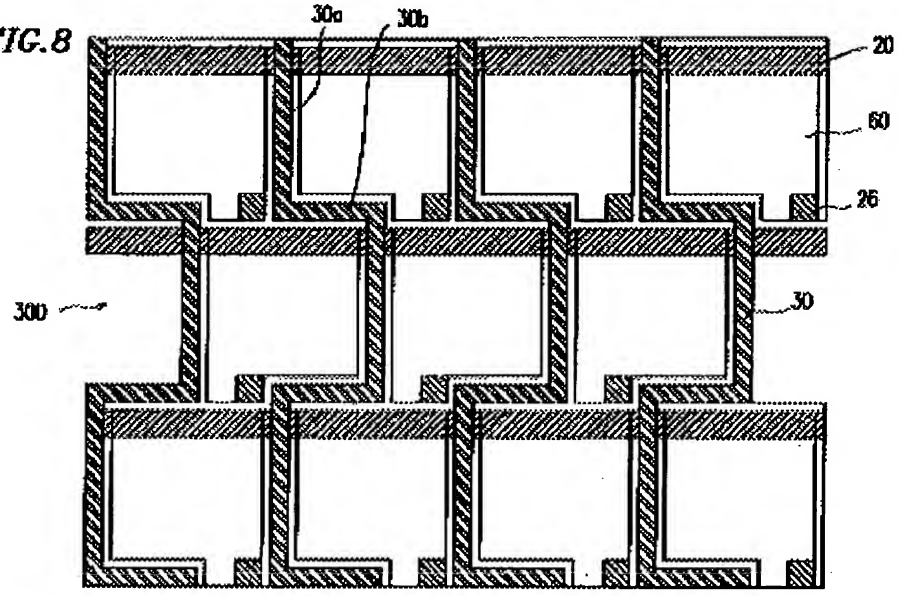
As to claim 6, Kim in view of Ogawa, as combined above, disclose the liquid crystal display of claim 4.

Kim in view of Ogawa do not explicitly disclose a display wherein the distance between two neighboring second wiring lines is repeatedly varied per a predetermined

length, and the pixel electrode has lateral sides positioned, close to the second wiring lines with the same outline such that the pixel electrode bears a narrow portion and a wide portion.

Kanemori teaches a display in Example 3 (Figures 8 and 9, col. 8, line 65, col. 9, line 21) wherein the distance between two neighboring second wiring lines, 30, 30a, and 30b, is repeatedly varied per a predetermined length, and the pixel electrode has lateral sides positioned, close to the second wiring lines with the same outline such that the pixel electrode bears a narrow portion and a wide portion to avoid (Title, col. 5, lines 22-26) unwanted color shade pattern cycle (unwanted stripes).

FIG. 8



Kanemori is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to establish a distance between two neighboring second wiring lines that is repeatedly varied per a predetermined length, and the pixel

electrode has lateral sides positioned, close to the second wiring lines with the same outline such that the pixel electrode bears a narrow portion and a wide portion to avoid unwanted color shade pattern cycle.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Kim in view of Ogawa with a distance between two neighboring second wiring lines that is repeatedly varied per a predetermined length, and the pixel electrode has lateral sides positioned, close to the second wiring lines with the same outline such that the pixel electrode bears a narrow portion and a wide portion of Kanemori to avoid unwanted color shade pattern cycle.

As to claim 5, Kim in view of Ogawa, as combined above, disclose the liquid crystal display of claim 4.

Kim in view of Ogawa do not explicitly disclose a display wherein the micro-domains are classified into left and right domains, and upper and lower domains, the volume occupied by the upper and lower domains being larger than the volume occupied by the left and right domains.

Kanemori teaches a display in Example 3 (Figures 8 and 9, col. 8, line 65, col. 9, line 21) wherein the distance between two neighboring second wiring lines, 30, 30a, and 30b, is repeatedly varied per a predetermined length, and the pixel electrode has lateral sides positioned, close to the second wiring lines with the same outline such that the

pixel electrode bears a narrow portion and a wide portion to avoid (Title, col. 5, lines 22-26) unwanted color shade pattern cycle (unwanted stripes).

Kanemori is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to establish a distance between two neighboring second wiring lines that is repeatedly varied per a predetermined length, and the pixel electrode has lateral sides positioned, close to the second wiring lines with the same outline such that the pixel electrode bears a narrow portion and a wide portion to avoid unwanted color shade pattern cycle. This would result in unequal pixel areas in the domain regions of the pixel of Kim in view of Ogawa which in turn would result in the claimed micro-domains are classified into left and right domains, and upper and lower domains, the volume occupied by the upper and lower domains being larger than the volume occupied by the left and right domains.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Kim in view of Ogawa with micro-domains classified into left and right domains, and upper and lower domains, the volume occupied by the upper and lower domains being larger than the volume occupied by the left and right domains of Kanemori to avoid unwanted color shade pattern cycle.

Response to Arguments

Applicant's arguments filed on 22 July 2004 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are as follows:

(1) Examiner cited Takao as teaching a results effective variable wherein the B cell gap, the R cell gap and the G cell cap are differentiated from each other by: R cell gap - G cell gap < G cell gap - B cell gap [bottom of page 6 of Applicant's remarks filed 22 July 2004].

(2) Regarding base claims 1, 7, and 9, Takao teaches away from providing a B cell gap differentiated from an R cell gap or a G cell gap. Takao is primarily concerned with eliminating a stepped difference from occurring between color filter units within the substrate plane.

(3) Dependent claims 2-6, 8, 10, and 11 are patentable over the applied references for the reasons discussed ((1) above) as well as for the additional features they recite.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that, in the Final Rejection mailed 20 April 2004, Examiner did *not* yet cite Takao as teaching a results effective variable wherein the B

cell gap, the R cell gap and the G cell cap are differentiated from each other by: R cell gap - G cell gap < G cell gap - B cell gap, because those limitations were not entered prior to the RCE of 18 October 2004. Examiner respectfully requests Applicant refrain from obfuscating the record with false statements.

(2) It is respectfully pointed out that Takao teaches reducing or eliminating the stepped difference only for larger step differences than claimed by Applicant and for larger step differences than disclosed in Figure 2 of Takao (col. 5, lines 3-63), resulting in an alternate configuration shown in Figure 3. Takao teaches small step differences that satisfy the criterion of Takao (and the range claimed by Applicant) result in Applicant's claimed invention illustrated in Figure 2 of Takao per rejections above (col. 4, line 65 through col. 5, line 19).

(3) It is respectfully pointed out that Applicant has not provided any specific arguments as to examiner's position(s) regarding rejection of dependent claims 2, 4-6, 8, 10, and 11. It is further pointed out that Applicant's arguments regarding base claims 1, 7, and 9 are rebutted in (1) above. As a result, Applicant has acquiesced all of examiner's further position(s) and acquiesced all of examiner's further rejections of dependent claims 2, 4-6, 8, 10, and 11.

References cited but not applied are relevant to the instant Application.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tlr

Timothy L Rude
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